ABSTRACT OF THE DISCLOSURE

An apparatus and method is described for obtaining a preparative-scale, free-fluid electrophoretic separator with high resolution as well as an analytical capability commensurate with capillary zone electrophoresis. The electrophoretic focusing apparatus and method of the present invention features a separation chamber bounded by planar precision-pore, insulated screens, a plurality of purge chambers, a plurality of electrode chambers, and a plurality of pump means. The separation device of the invention is capable of high speed of separation and short residency of sample through the use of high voltage gradients which are produced by relatively low voltages applied across the narrow chamber dimensions. The present invention is also highly flexible, with operation in a constant electric field, continuous flow mode which permits scanning of the sample fraction content and display in a conventional histogram format. The present apparatus and method thus achieves high resolution of separation in an analytical or a preparative mode through a practically unlimited scale-up potential, and controls the adverse effects of Joule heating and electrohydrodynamics on the electrophoretic separation procedure.